

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: WRIGHT, David Kent; FULLAM, Philip Stephen

SERIAL NO.:

FILED: Herewith

TITLE: METHOD AND APPARATUS FOR DETECTING MASTITIS

Preliminary Amendment: CLAIM AMENDMENTS

1. (Currently amended) A method of testing milk from an animal for the presence of an infection in the animal, the method ~~including~~ comprising the steps of:

introducing a sample of milk and a reagent ~~including~~ comprised of a light amplifying compound into a reaction chamber, the light amplifying compound reacting with a substance produced by cells of the animal in response to infection to emit light; and

immediately measuring ~~the~~ intensity of any light emitted from the sample.

2. (Currently amended) A method according to claim 1 ~~wherein, further comprising: reacting~~ the light amplifying compound ~~reacts~~ with a substance produced by phagocytic leukocytes in response to infection to emit light.

3. (Currently amended) A method according to claim 2 ~~wherein, further comprising: reacting~~ the light amplifying compound ~~reacts~~ with a substance produced when phagocytic leukocytes phagocytose bacteria to emit light.

4. (Currently amended) A method according to claim 3 ~~wherein, further comprising reacting~~ the light amplifying compound ~~reacts~~ with reactive oxygen to emit light.

5. (Currently amended) A method according to claim 1, wherein ~~the~~ measuring intensity of light emitted from the sample is measured up to a maximum of five minutes, after ~~the~~ adding of the reagent to the sample.

6. (Currently amended) A method according to claim 1, ~~wherein the method further includes~~ further comprising the steps of:

connecting a first inlet port of generally a fluid and light tight reaction chamber of variable capacity to a milk line in an automated milking system,

connecting a second inlet port of the reaction chamber to a supply of reagent, and

increasing ~~the~~ capacity of the chamber in order to draw milk and reagent into the chamber.

7. (Currently amended) A method according to claim 6, ~~wherein the method further includes~~ further comprising the step of:

controlling electrically operating valves provided in ~~the~~ inlet ports to regulate ~~the~~ proportion of reagent and sample drawn into the reaction chamber.

8. (Currently amended) A method according to claim 6, wherein ~~the~~ capacity of the reaction chamber is increased by movement of a piston.

9. (Currently amended) An apparatus for testing milk in an automated milking system, the apparatus ~~including~~ comprising:

a generally fluid and light tight chamber of variable capacity ~~including~~ having an inlet port and an outlet port, means to increase ~~the~~ capacity of the chamber in order to draw fluid into the chamber from the inlet port or to decrease the capacity of the chamber to expel fluid in the chamber through the outlet port, and

a light detector ~~to detect~~ for any light emitted from the fluid in the chamber.

10. (Currently amended) An apparatus according to claim 9, wherein the chamber is provided with two inlet ports, one of which is connected to the milk line; and the other of which is connected to a source of reagent including a light amplifying compound, the light amplifying compound reacting with a substance being present only in an infected sample to emit light.

11. (Currently amended) An apparatus according to claim 10, wherein the inlet ports ~~include~~ are comprised of electrically operated valves ~~which may be~~ being operated by a controller automatically to regulate ~~the~~ proportion of reagent and sample drawn into the chamber.

12. (Currently amended) An apparatus according to claim 11, wherein the inlet ports ~~may include~~ are further comprised of valves ~~which are~~ metered to ensure that the required proportion of sample and reagent are drawn into the chamber.

13. (Currently amended) An apparatus according to claim 9, wherein the means to increase or decrease the capacity of the chamber is comprised of a piston.

14. (Currently amended) An apparatus according to claim 13, wherein the piston is actuated by ~~means of~~ an electrical solenoid.

15. (Currently amended) An automatic milking system ~~including~~ comprising:
a generally fluid and light tight chamber of variable capacity ~~including~~ having an inlet port and an outlet port, means to increase the capacity of the chamber in order to draw milk into the chamber from a conduit for milk via the inlet port or to decrease the capacity of the chamber to expel fluid in the chamber through the outlet port, and

a light detector to detect any light emitted from the fluid in the chamber.

16. (Currently amended) An automatic milking system according to claim 15, wherein the inlet port is connected to the milk conduit by ~~means of~~ an auxiliary milk conduit.

17. (Currently amended) An automatic milking system according to claim 15, ~~wherein the milking system~~ further ~~includes~~ comprising:

a data processing apparatus ~~which is~~ connected to the light detector and ~~which is~~ programmed to record ~~the~~ amount of light detected by the light detector, ~~to compare the results with standard data and to provide an indication as to whether the milk has been taken from an animal with mastitis.~~

18. (Original) An automatic milking system according to claim 17 wherein the data processing apparatus is connected to a visual display apparatus adapted to provide a visual warning that mastitis has been detected.

19. (Original) An automatic milking system according to claim 17 wherein the data processing apparatus is connected to an audible warning device adapted to provide an audible warning that mastitis has been detected.

20. (Currently amended) An automatic milking system according to claim 15, wherein the chamber is provided with two inlet ports, one of which is connected to the milk conduit, and the other of which is connected to a source of reagent including a light amplifying compound, the light amplifying compound reacting with a substance being present only in an infected sample to emit light.